NOTIFICATION OF ADDENDUM

ADDENDUM NO. 1

DATED 1/23/2009

Control	**6187-24-001**
Project	**RMC - 618724001**
Highway	**SH0199**
County	**TARRANT**

Ladies/Gentlemen:

Attached please find an addendum on the above captioned project. Included in the attachment is an adendum notification which details the changes and the respective proposal pages which were added and/ or changed.

Except for new bid insert pages, it is unnecessary to return any of the pages attached.

Bid insert pages must be returned with the bid proposal submitted to the Department, unless your firm is submitting a bid using a computer print out. The computer print out must be changed to reflect the new bid item information.

Contractors and material suppliers, etc. who have previously been furnished informational proposals are not being furnished a copy of the addendum. If you have a subcontractor on the above project, please advise them of this addendum. Acknowledgment of this addendum is not requested if your company has been issued a proposal stamped “This Proposal Issued for Informational Purposes.”

You are required to acknowledge receipt of this addendum on the Addendum Acknowledgement form contained in your bid proposal by placing a mark in the box next to the respective addendum.

Failure to Acknowledge receipt of this addendum in your bid proposal will result in your bid not being read.

04/99

SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: RMC - 618724001 CONTROL: 6187-24-001

COUNTY: TARRANT

LETTING: 01/27/2009

REFERENCE NO: 0123

PROPOSAL ADDENDUMS

_ PROPOSAL COVER

X BID INSERTS (SH. NO.: CHANGE IN GENERAL NOTES SHEET 2A)

X GENERAL NOTES (SH. NO.: SHEET 2A UNDER SPECIAL NOTES CHANGED 1ST PARAGRAPH)

X SPEC LIST (SH. NO.: ADDED SPEC 6141 AS A REFERENCE TO ITEM 788)

_ SPECIAL PROVISIONS:

ADDED:

DELETED:

X SPECIAL SPECIFICATIONS:

ADDED: 6141

DELETED:

_ OTHER:

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

ADDED SPECIAL SPECIFICATION 6141 AS A REFERENCE TO ITEM 788
GENERAL NOTES SHEET 2A UNDER SPECIAL NOTES REVISED FIRST SENTENCE IN FIRST PARAGRAPH TO SH 199

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	422	2002		REINF CONC SLAB (EXT SLAB) DOLLARS and CENTS	SF	700.000	1
	425	2003		PRESTR CONC BEAM (TY C) DOLLARS and CENTS	LF	69.670	2
	452	2007		REMOVE RAIL (TY 6) DOLLARS and CENTS	LF	70.000	3
	496	2013		REMOV STR (BRIDGE SLAB) DOLLARS and CENTS	EA	1.000	4
	500	2001	005	MOBILIZATION DOLLARS and CENTS	LS	1.000	5
	502	2001	033	BARRICADES, SIGNS AND TRAFFIC HANDLING DOLLARS and CENTS	MO	2.000	6
	506	2034	010	TEMPORARY SEDIMENT CONTROL FENCE DOLLARS and CENTS	LF	200.000	7
	788	2001		CONCRETE BEAM REPAIR DOLLARS and CENTS	EA	1.000	8
	6834	2001		PORTABLE CHANGEABLE MESSAGE SIGN DOLLARS and CENTS	DAY	65.000	9

GENERAL NOTES:

PLANS ARE REQUIRED.

BID PROPOSALS FOR THIS PROJECT WILL BE DELIVERED TO THE **DISTRICT MAINTENANCE CONTRACTING OFFICE** AT THE FOLLOWING ADDRESS:

ADMINISTRATION ANNEX BUILDING
2501 SW LOOP 820
FORT WORTH, TEXAS 76133

PERSONNEL WILL BE EXPERIENCED IN ITEMS OF WORK IN CONTRACT. SAFETY VESTS AND HARD HATS WILL BE PRE-APPROVED AND WORN AT ALL TIMES WHEN OUTSIDE VEHICLES WITHIN THE WORK AREA.

CONTRACT PROSECUTION: EACH CONTRACT AWARDED BY THE DEPARTMENT STANDS ON ITS OWN AND AS SUCH, IS SEPARATE FROM OTHER CONTRACTS. A CONTRACTOR AWARDED MULTIPLE CONTRACTS MUST BE CAPABLE AND SUFFICIENTLY STAFFED TO CONCURRENTLY PROCESS AND/OR EXECUTE ALL CONTRACTS AT THE SAME TIME.

COORDINATE ALL WORK THROUGH THE AREA ENGINEER SHOWN BELOW OR HIS REPRESENTATIVE:

RALPH BROWNE
2501 W. EULESS BLVD.
EULESS, TEXAS 76039
(817) 399-4302

**** SPECIFICATION DATA ****

SPECIAL NOTES:
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ANY WORK REQUIRING LANE CLOSURES ON SH 121 WILL BE PERFORMED AS NIGHT WORK. FREEWAY LANE CLOSURES WILL ONLY BE PERMITTED AT NIGHT STARTING AT 9 PM AND PICKED UP BY 5 AM.

STANDARD SHEETS TCP (6-1)-98A THRU TCP (6-7)-98A SHALL SERVE AS A GUIDE TO THE TRAFFIC CONTROL PLAN FOR ALL WORK PERFORMED ON SH 121. DETAILS OF THE SPECIFIC TRAFFIC CONTROL PLAN INCLUDING WARNING SIGNS TO BE USED FOR THE PROPOSED WORK MUST BE SUBMITTED BY THE

CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL. THIS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO ITEM 502.

THE CONTRACTOR WILL BE REQUIRED TO PROVIDE FOR THE SAFE PASSAGE OF TRAFFIC ON, AND/OR ACROSS EXISTING HIGHWAYS, ROADS OR STREETS WHERE SUCH FACILITIES ARE INVOLVED IN THE CONSTRUCTION OF THIS PROJECT.

ITEM 502. BARRICADES, SIGNS, AND TRAFFIC HANDLING

ATTACH BARRIER REFLECTORS (TY C DELENIATORS) TO THE EXISTING CONCRETE TRAFFIC BARRIER AS INDICATED IN TxDOT STANDARD BC (7)-07. THIS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO ITEM 502.

MAINTENANCE OF ROADWAYS, NOT PAID AS "CONSTRUCTING DETOURS", AND DESIGNATED IN THE TRAFFIC CONTROL PLAN TO CARRY TRAFFIC, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE PAID FOR BY "CONTRACTOR FORCE ACCOUNT OR AGREED UNIT PRICE".

EXISTING SIGNS ARE TO REMAIN AS LONG AS THEY DO NOT INTERFERE WITH CONSTRUCTION AND THEY DO NOT CONFLICT WITH THE TRAFFIC CONTROL PLAN.

ANY SIGN NOT DETAILED IN THE PLANS BUT CALLED FOR IN THE LAYOUT SHALL BE AS SHOWN IN THE CURRENT "STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS”.

WHEN TRAFFIC IS OBSTRUCTED, ARRANGE WARNING DEVICES IN ACCORDANCE WITH ARRANGEMENTS INDICATED IN THE LATEST EDITION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

COVER OR REMOVE ANY WORK ZONE SIGNS WHEN WORK OR CONDITION REFERENCED IS NOT OCCURRING.

WHEN DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PROVIDE UNIFORMED OFF-DUTY CITY OF FORT WORTH POLICEMENT AND CITY OF FORT WORTH POLICE DEPARTMENT PATROL CRUISERS DURING ANY WORK THAT REQUIRES A LANE TO BE CLOSED. THE NUMBER OF UNITS AND DURATION OF USE WILL BE DETERMINED IN THE FIELD BY THE ENGINEER. THIS WORK WILL BE PAID FOR BY “CONTRACTOR FORCE ACCOUNT OR AGREED UNIT PRICE”.

FOR NIGHTTIME OPERATIONS SUBMIT TO THE ENGINEER FOR APPROVAL, A LIGHTING PLAN THAT PROVIDES THE FOLLOWING INFORMATION:

- LOCATIONS OF ALL LIGHTS, TYPICAL SPACING, LATERAL PLACEMENT, LUMINAIRE HEIGHT, MOUNTING DETAILS FOR LIGHTS ON EQUIPMENT, INCLUDING HOW THE LIGHTS ARE TO BE ATTACHED, ORIENTED, AND AIMED.
- DESCRIPTION OF LIGHT TOWERS AND OTHER LIGHTS TO BE USED, INCLUDING TYPE OF LUMINAIRE, MANUFACTURER'S NUMBER, TECHNICAL DETAILS ON ALL LIGHTING FIXTURES, INCLUDING POWER RATINGS AND PHOTOMETRIC CHARTS.
- DESCRIPTION OF ALL ELECTRICAL POWER SOURCES.
- DETAILS ON HOODS, LOUVERS, SHIELDS, OR OTHER EQUIPMENT TO BE USED TO CONTROL GLARE, INCLUDING MOUNTING DETAILS AND LOCATIONS WHERE THE EQUIPMENT IS TO BE USED.
- LIGHTING CALCULATIONS CONFIRMING THAT THE PROPOSED PLAN MEETS AN ILLUMINANCE EQUAL TO OR GREATER THAN 20 FOOTCANDLES

NO DIRECT COMPENSATION WILL BE MADE FOR FULFILLING THESE REQUIREMENTS, AS THIS WORK IS CONSIDERED SUBSIDIARY TO THIS ITEM.

FLOODLIGHTING SHALL NOT PRODUCE A DISABLING GLARE CONDITION FOR APPROACHING ROAD USERS, FLAGGERS, OR WORKERS.

ITEM 6834. PORTABLE CHANGEABLE MESSAGE SIGNS

ALL PORTABLE CHANGEABLE MESSAGE SIGNS AND ARROW PANELS ARE TO BE PROVIDED WITH A PHOTOELECTRIC DEVICE TO ALLOW FOR AUTOMATIC DIMMING OF OPERATIONS TO APPROXIMATELY 50% OF THEIR NORMAL BRIGHTNESS WHEN AMBIENT LIGHT DROPS TO APPROXIMATELY FIVE FOOTCANDLES, AND THEN INCREASE BACK AGAIN FOR DAYTIME OPERATIONS.

TWO (2) ELECTRONIC PORTABLE CHANGEABLE MESSAGE SIGN UNITS WILL BE REQUIRED ON NORTHBAOUND SH 199. INDIVIDUAL OR COLLECTIVE USE OF SIGNS WILL BE REQUIRED BY THE ENGINEER WHEN DEEMED NECESSARY TO SUPPLEMENT THE TRAFFIC CONTROL PLAN.

EACH SIGN SHALL BE PROGRAMMED IN ITS PERMANENT MEMORY THE FOLLOWING 15 MESSAGES:

1. RAMP CLOSED AHEAD
2. USE OTHER ROUTES
3. RIGHT LANE
4. LEFT LANE
5. CLOSED AHEAD
6. TWO LANE

7. DETOUR AHEAD
8. THRU TRAFFIC
9. PREPARE TO STOP
10. MERGING TRAFFIC
11. EXPECT 15 MINUTE DELAY
12. MAX SPEED ** MPH
13. MERGE RIGHT
14. MERGE LEFT
15. NO EXIT NEXT ** MILES

CONTROL : 6187-24-001
PROJECT : RMC - 618724001
HIGHWAY : SH0199
COUNTY : TARRANT

TEXAS DEPARTMENT OF TRANSPORTATION

GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS

ALL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE TO THIS PROJECT ARE IDENTIFIED AS FOLLOWS:

STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION JUNE 1, 2004. STANDARD SPECIFICATIONS ARE INCORPORATED INTO THE CONTRACT BY REFERENCE.

ITEMS 1 TO 9 INCL., GENERAL REQUIREMENTS AND COVENANTS
ITEM 422 REINFORCED CONCRETE SLAB (420)(421)<424><426><430>(440)
ITEM 425 PRECAST PRESTRESSED CONCRETE STRUCTURAL MEMBERS (420) (421)(424)(426)(427)(434)(440)<442>
ITEM 452 REMOVING RAILING (420)
ITEM 496 REMOVING STRUCTURES <430>
ITEM 500 MOBILIZATION
ITEM 502 BARRICADES, SIGNS, AND TRAFFIC HANDLING
ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS (432)(556)
ITEM 788 CONCRETE BEAM REPAIR (426)(427)(429)(441)(442)(780)<4191>

SPECIAL PROVISIONS: SPECIAL PROVISIONS WILL GOVERN AND TAKE PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED HEREON WHEREVER IN CONFLICT THEREWITH.

SPECIAL PROVISION "SCHEDULE OF LIQUIDATED DAMAGES" (000--1002)
SPECIAL PROVISION "DEPARTMENT DIVISION MAILING AND PHYSICAL ADDRESS" (000---011)
SPECIAL PROVISION TO ITEM 1 (001---005)
SPECIAL PROVISION TO ITEM 2 (002---013)
SPECIAL PROVISION TO ITEM 3 (003---023)
SPECIAL PROVISION TO ITEM 4 (004---012)
SPECIAL PROVISION TO ITEM 5 (005---004)
SPECIAL PROVISION TO ITEM 6 (006---030)
SPECIAL PROVISIONS TO ITEM 7 (007---213)(007---445)
SPECIAL PROVISIONS TO ITEM 9 (009---012)(009---015)
SPECIAL PROVISION TO ITEM 420 (420---002)

SPECIAL PROVISION TO ITEM 421 (421---031)
SPECIAL PROVISION TO ITEM 424 (424---001)
SPECIAL PROVISION TO ITEM 440 (440---001)
SPECIAL PROVISION TO ITEM 442 (442---005)
SPECIAL PROVISION TO ITEM 500 (500---005)
SPECIAL PROVISION TO ITEM 502 (502---033)
SPECIAL PROVISION TO ITEM 506 (506---010)

SPECIAL SPECIFICATIONS:

ITEM 4191 CARBON FIBER REINFORCED POLYMER (CFRP) FOR STRENGTHENING CONCRETE STRUCTURE MEMBERS
ITEM 6834 PORTABLE CHANGEABLE MESSAGE SIGN <502>

GENERAL: THE ABOVE-LISTED SPECIFICATION ITEMS ARE THOSE UNDER WHICH PAYMENT IS TO BE MADE. THESE, TOGETHER WITH SUCH OTHER PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE-LISTED SPECIFICATION ITEMS, AND INCLUDING THE SPECIAL PROVISIONS LISTED ABOVE, CONSTITUTE THE COMPLETE SPECIFICATIONS FOR THIS PROJECT.

SPECIAL SPECIFICATION
6141
Camera Pole Structure

1. **Scope.** This Specification will supplement the camera pole details found on the plans. This Item governs the design, fabrication, delivery, and installation of camera pole structures as shown on the plans. The design conforms to the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals", with Interim Specifications thereto and with additional interpretations as applied by the Department.

   A. Submittal Components. As a minimum, the submittal for this Item completely addresses the following:

   Camera pole shop drawings clearly detailing the following:

   - Physical Pole Drawings
   - Anchor Bolts
   - Material List
   - Weatherhead
   - Cabinet Mounting Attachments (when cabinet required)

   CCTV cabinet shop drawings clearly detailing the following: (When cabinet required).

   - Dimensions
   - Shelves
   - Door
   - Gasket
   - Door Look
   - Materials List
   - Exterior Finish
   - Ventilation
   - Terminal Strips
   - Harnesses
   - Connectors
   - Filter
   - Power Distribution Panel
   - Surge Suppression
   - Back Panel
   - Voice Communications Jack
   - Outlets
   - Circuit Breakers
   - Power Cable Terminals
   - Wiring Diagrams
   - Cabinet Grounding
   - Environmental Parameters
   - Lightning Rod

2. **Materials.**

   A. General. This Specification, instructions on the plans, and the drawings constitute the only acceptable design for the assemblies.

   Fabricate and weld in accordance with Item 441, "Steel Structures". Ensure all welded joints develop the full required strength of the member.

   Ensure all materials furnished, assembled, fabricated or installed under this Item are new, corrosion resistant and in strict accordance with the details shown on the plans and in the Specifications.

B. Shop Prints. Submit seven prints of the shop drawings and one copy on CD(s) of electronic version in MicroStation readable format showing the fabrication and erection details for each support including the CCTV cabinet and mounting details to the Engineer for review and approval prior to fabrication. Prepare the drawings on sheets 11 in. x 17 in. in size.

Each sheet has a title in the lower right corner which includes the sheet index data shown in the lower right corner of the project plans, names of the Fabricator and Contractor, and sheet numbering.

Drawings for only 1 support need be submitted for 2 or more supports in the submittal which are of identical design and dimensions.

Ensure responsibility for the correctness and completeness of the drawings and for shop fit and field connections, even though the drawings have been approved by the Department.

Fabricate the camera pole to the design wind speed specified on the plans and identify permanently on the pole base plate and visible after erection.

C. Anchor Bolts. Ensure anchor bolts conforms to the requirements in the standard drawings and complies with the requirements of ASTM A36, if 1 in. or less in diameter, and if greater than 1 in. diameter, with the requirements of ASTM A193-B7 or A687, or if designated A36M55 with the requirements of Item 449, "Anchor Bolts". Dimensions are based on the foundation size required for the arm lengths, number of arms, and design wind speed specified on the plans.

The anchor bolts has the standard nut anchorage. Nuts must comply with the requirements of ASTM A563 Grade A or better, heavy hex. Washers must comply with the requirements of Item 447, "Structural Bolting".

Provide two circular steel templates for each assembly but they may be shipped without the anchor bolts attached. Tack weld the lower nut to the lower template. The upper template may be re-used providing it stays in place until the concrete has achieved its initial set.

Galvanize or paint the upper 14 in. of all anchor bolts with 2 coats of a zinc-rich coating containing a minimum of 95% zinc and meeting Federal Specification DOD-P-21035A. Exposed nuts must be galvanized or also coated with the same zinc-rich paint. Washers must be galvanized.

Threads for anchor bolts must be rolled or cut threads of unified coarse thread series except for ASTM A193-B7 bolts which are be 8 pitch thread series. If rolled, the diameter of the unthreaded portion must not be less than the minimum pitch diameter nor more than the maximum major diameter of the threads. Threads have Class 2 fit tolerances. Galvanized nuts must be tapped after galvanizing.

Coat the threads of anchor bolts with pipe joint compound prior to installation of upper nuts when erecting pole. After poles are plumbed and in permanent alignment, the exposed upper threads of painted bolts are to be cleaned and an additional coating of the zinc-rich paint applied to seal the bolt thread-nut joint.

D. Poles. The shaft for the pole may be round or octagonal and tapered. Circumferential welds, other than at the ends of the shafts, are not permitted. The exterior of longitudinal seam welds are ground or otherwise smoothed to the same appearance as other shaft surfaces. Longitudinal seam welds for pole sections have 60% minimum penetration and 5.9 in. of circumferential base welds. A maximum of 2 longitudinal seam welds may be made in pole sections. Use for all welds low hydrogen electrodes, or the equivalent in wire and flux for automatic welding. Use preheating for welding the pole to the base plate in accordance with ANSI/AWS D1.1 Structural Welding Code.

The material for pole shafts conform to the requirements in the standard drawings and comply with the requirements of ASTM A570 Grade 50, or A572 Grade 50, or A670 Grade 50, or A595 Grade A, or if designated A36M50 with the requirements of Item 442, "Metal for Structures". Material supplied under the A570 Grade 50 or A595 Grade A specifications must meet their associated chemical and bend test requirements with the further stipulation that the materials must meet a minimum yield of 50 Kips/square inch and a minimum elongation of 18% in 8 in. or 23% in 2 in. prior to brake or tube forming operations. A570 Grade 50 material in thickness up to 5/16 in. is also acceptable providing it meets the above stated chemical, bend test, yield, and elongation requirements. A595 Grade A material which can be shown by tests to have a minimum of 345 MPa yield adjacent to base welds after fabrication will also be acceptable.

Provide mill test reports and/or laboratory test certifications to show that the materials conform to these requirements.

Secure a metal cap at the top of all poles using galvanized or stainless steel set screws.

E. Finish.

1. Galvanize the camera pole.

2. Round or chamfer all sheared or cut edges and all other exposed edges to be painted or galvanized to an approximate 1/16 in.

3. Hot-Dip Galvanizing. Design camera poles to be hot-dip galvanized as to provide proper filling, venting, and draining during the cleaning and galvanizing operations. All parts, with the exception of the lower portion of the anchor bolts, nut anchorages, and the top and bottom templates, must be hot-dip galvanized after fabrication in accordance with ASTM A123. All screws, nuts, bolts, washers, shims, and the upper portion of the anchor bolts if galvanized are in conformance with the Specifications of ASTM A153, Class C or D, unless otherwise specified. Tap all nuts after galvanizing. Repair any part of the mast arm assembly, from which the galvanizing has been knocked or chipped to bare metal in fabrication or transit, by application of galvanizing-repair compounds in accordance with the manufacturer's recommendations. Apply the galvanizing repair so as to provide a final assembly which is neat in appearance.

F. CCTV Cabinet. House the CCTV field equipment in cabinets as shown on the plans. Provide the cabinet with fully wired back panels, with all the necessary terminal boards, wiring, harnesses, connectors and attachment hardware for each cabinet location. Place

all terminals and panel facilities on the lower portion of the cabinet walls below all shelves.

Provide each cabinet complete with all internal components, back and side panels, terminal strips, harnesses, and connectors as well as all mounting hardware necessary to provide for installation of equipment as shown on the plans and Specifications.

Ensure all cabinets are identical in size, shape and quality throughout the entire project. In addition, equip the cabinets internally as specified herein.

Submit details of the cabinet design and equipment layout to the Engineer for review and approval prior to fabrication.

Each cabinet, as a minimum, must supply the following:

Adjustable Shelves, as Required

Backpanel

Surge Protection

Terminal Strips

Interconnect Harnesses with Connectors

Jack for Field Telephone

"Door Open" connection to back panel

All necessary Installation and Mounting Hardware

G. Electrical Requirements.

1. Backpanel. This panel includes the following components:

a. Circuit Breakers. Approve and list the circuit breakers by Underwriters Laboratories. Enclose the operating mechanism and the switches marked to indicate whether it is in the closed or open position. Enclose contacts silver alloy enclosed in an arc quenching chamber. Each cabinet has, as a minimum, a single pole, 20 ampere circuit breaker. Circuit breaker must be unaffected by ambient temperature range, relative humidity, applied power, shock and vibration range specified in Section 2, "Environmental Standards and Test Procedures", of NEMA TS1-1989. Circuit breaker has an interrupt capacity of 5,000 amperes and insulation resistance of 100 megs at 500 volts DC.

b. Power Line Surge Protection. Provide power line surge protectors and installed as described below.

(1) Provide one surge protector with a 3 electrode gas tube type and that has the following ratings:

(a) Impulse Breakdown: Less than 1,000 volts in less than 0.1 microseconds at 10 kilovolts/microsecond.

(b) Standby Current: Less than 1 milliampere.

(c) Striking Voltage: Limit any voltage greater than 212 volts dc.

(d) Capable of withstanding 15 pulses of peak current, each of which will rise in 8 microseconds and fall in 20 microseconds to 1/2 the peak voltage, at 3 minute intervals. Peak current rating must be 20,000 amperes. Utilize the surge protector both metal oxide varistors and silicon avalanche diodes to protect against transients having a single surge energy level up to 70 joules, voltage transients up to 6 kv and current transients up to 6 ka. Provide protection for line to neutral, line to ground and neutral to ground terminals.

(2) Provide the protectors with the following ratings:

(a) Recurrent peak voltage 212 volts.

(b) Energy rating minimum 120 joules.

(c) Power dissipation - average 0.85 watt.

(d) Peak current for pulses for less than 6 microseconds 20,000 amperes.

(e) Standby current less than 1 milliampere.

c. Power Cable Input Junction Terminals. Provide power distribution blocks suitable for use as a power feed and junction points for 2 and 3 wire circuits. The line side of each circuit shall be capable of handling 2 size 1/0 AWG conductors.

Electrically isolate the AC neutral and equipment ground wiring from the line wiring by an insulation resistance of at least 10 megohms when measured at the AC neutral. Color code the AC neutral and equipment grounding wiring white and green respectively.

d. Voice Communication Jack. Provide an RJ-11 modular telephone jack for the voice communication equipment at a convenient location on the right side panel. Connect the jack to the communications medium.

Utilize the back panel to distribute and properly interconnect all cabinet wiring related to the specific complement of equipment called out on the plans. Each Item of equipment including any furnished by the Department must have its

cable harness properly terminated at terminal boards on the back panel. Ensure all functions available at the equipment connector are carried in the connector cable harness to the terminal blocks from the power distribution panel mounted on the left side panel of the cabinet.

2. **Wiring.** Ensure all cabinet wiring identified by the use of insulated pre-printed sleeving slipped over the wire before attachment of the lug or making the connection. The wire markers carry this legend in plain words with sufficient details so that a translating sheet will not be required.

   Cut all wires to the proper length before assembly. Ensure no wires are doubled back to take up slack. Ensure harnesses to connectors are covered with "Chinese Finger" woven braid or braided. Secure cables with nylon cable clamps.

   Provide service loops to facilitate removal and replacement of assemblies, panels and modules.

   Route and bundle all wiring containing line voltage AC separately and/or shielded from all low voltage, i.e., control circuits. Cover all conductors and live terminals or parts, which could be hazardous to maintenance personnel, with suitable insulating material.

   Ensure all conductors used on the cabinet wiring are No. 22 AWG or larger with a minimum of 19 strands. Conductors conform to MIL SPEC MIL-W-168780, Type B or D. Ensure the insulation has a minimum thickness of 10 mils. Ensure all wiring containing line voltage is a minimum size of No. 14 AWG.

3. **Terminal Strips.** Terminal strips located on the backpanel must be accessible to the extent that it is not necessary to remove the electronic equipment from the cabinet to make an inspection or connection.

   Ensure terminal blocks are 2 positions, multiple pole barrier type. Provide shorting bars in each of the positions provided along with an integral marking strip. Arrange terminal blocks that they will not upset the entrance, training and connection of incoming field conductors. Identify all terminals suitably identified by legends permanently affixed and attached to the terminal blocks. Ensure not more than 3 conductors are brought to any 1 terminal screw. Ensure no electrically energized components or connectors extend beyond the protection afforded by the barriers. Locate all terminal blocks below the shelves. Ensure terminals used for field connections are secure conductors by means of a No. 10-32 nickel or cadmium plated brass binder head screw. Ensure terminals used for interwiring connections, but not for field connections, are secure conductors by means of a No. 5-32 nickel plated brass binder head screw.

   As a minimum, all connections to and from the electronic equipment must terminate to an interwiring type block. These blocks will act as intermediate connection points for all electronic equipment input/output.

4. **Cabinet Internal Grounding.** The cabinet internal ground consists of 1 or more ground bus-bars permanently affixed to the cabinet and connected to the grounding

electrode. Use bare stranded No. 6 AWG copper wire between bus-bars and between the bus-bar and grounding electrode. Ensure each copper ground bus-bar has a minimum of 20 connector points, each capable of securing at least 1 No. 10 AWG conductor.

Return AC neutral and equipment ground wiring to these bus-bars.

H. Mechanical Requirements.

1. **Size and Construction.** Clean-cut the cabinets in design and appearance and have the following minimum dimensions:

Depth	Width	Height
15 in.	20 in.	36 in.

Construct all cabinets of welded sheet aluminum with a minimum thickness of 0.19 in. Do not allow wood, wood fiber product, or flammable products in the cabinet. Effectively seal the cabinet structure to prevent the entry of rain, dust and dirt.

Ensure all exterior seams for cabinet and doors are continuously welded. File all edges to a radius of 1/32 in. minimum.

Ensure cabinets conform to the requirements of ASTM designation: B209 for 5052-H32 aluminum sheet.

Welding on aluminum cabinets are done by the gas metal arc (MIG) or gas tungsten arc (TIG) process using bare aluminum welding electrodes. Ensure electrodes conform to the requirements of the American Welding Society (AWS) A5.10 for ER5356 aluminum alloy bare welding electrodes.

Procedures, welding machines and welding machine operators for welding on aluminum must be qualified in accordance with the requirements of AWS B3.0, "Welding Procedures and Performance Qualification", and to the practices recommended in AWS C5.6.

2. **Ventilation.** Provide the cabinet with vent openings to allow convection cooling of electronic components.

Locate the vent opening on the lower portion of the cabinet side and covered fully on the inside with a commercially available disposable 3 layer graded type filter.

There is no opening on the top portion of the cabinet roof.

3. **Exterior Finish.** Carefully smooth the aluminum and the exterior in its unpainted natural color.

4. **Serial Number.** Provide the cabinets with a 5 digit serial number unique to the manufacturer and this 5 digit serial number proceeds by an assigned 2 letter manufacturer's code. Either stamp the entire identification code and number on a metal plate which is riveted to the cabinet, stamped directly on the cabinet, or

engraved on a metalized mylar plate that is epoxied to the cabinet on the upper right hand cabinet side wall.

5. **Shelves.** Provide adjustable shelves in each cabinet as required to support the equipment as specified on the plans. Ensure shelf adjustment is at 2 in. intervals in the vertical position.

   Remove the shelves and capable of supporting the electronic equipment. Provide a minimum of 1 in. between the rear and front edge of the shelf and the back inside wall and door of the cabinet respectively to allow room for the equipment cables.

6. **Mounting Hardware.** Furnish all cabinets with the appropriate mounting plates, anchor bolts, and any other necessary hardware to mount the cabinet on the camera pole structure. Weld cabinet mounting plates to the pole. Banding of cabinet or mounting plates must not be permitted. Design the cabinet for pole mounting and reinforced at the points of attachment to the pole.

7. **Door.** The cabinet door must be sturdy and torsionally rigid. The door must substantially cover the full area of the front of the cabinet and attached by a minimum of 2 heavy duty hinges.

   The hinges must utilize stainless steel hinge pins. Ensure the hinge and door assembly are of sufficient strength to withstand a 50 lb. load supplied vertically to the outer edge of the door. Ensure there are be no deformation or impairment of the door, locking mechanism or door seal when the load is removed.

   Provide each cabinet door with a No. 2 Corbin lock. Provide two keys for the tumbler lock for each cabinet. Provide the cabinet door with a catch mechanism to hold the door open at 2 positions minus 90 degrees, ± 10 degrees, and 180 degrees ± 10 degrees. Both the door and door stop mechanism must be of sufficient strength to withstand a simulated wind load of 5 lb. per square foot of door area applied to both inside and outside surfaces without failure, permanent deformation, or compromising of door position. Ensure the cabinets do not have auxiliary police doors.

   Provide a gasket to act as a permanent and weather resistant seal at the cabinet door facing. The gasket material must be of a non-absorbent material and maintain its resiliency after long term exposure to the outdoor environment.

   The gasket has a minimum thickness of 4 in. Locate the gasket in a channel provided for this purpose either on the cabinet or on the door. An “L” bracket is acceptable in lieu of this channel if the gasket is fitted snugly against the bracket to insure a uniformly dust and weather resistant seal around the entire door facing.

I. Surge Protection.

1. **Protector and Cabinet Configuration.** Provide all ungrounded conductor wires entering or leaving the cabinet with surge protectors. The conductor leads and the surge protector leads must be kept as short as possible with all conductor bends formed to the maximum possible radius. Locate the protector units as near as

possible (6 in.) to the entry or exit point, and as far as possible from any electrical equipment. Connect the protector ground lead directly to the ground bus.

Ensure the surge protector utilized for AC power does not dissipate any energy and does not provide any series impedance during standby operation. Return the unit to its non-shunting mode after the passage of any surge and do not allow the shunting of AC power.

J. Environmental Design Requirements. Ensure the camera pole and CCTV cabinet meets all functional requirements during and after subjection to any combination of the following requirements:

1. Ambient temperature range of 0ºF to 158ºF.

2. Temperature shock not to exceed 30 per hour, during which the relative humidity shall not exceed 95%.

3. Relative humidity range not to exceed 95% over the temperature range of 39ºF to 109ºF.

4. Moisture condensation on all surfaces caused by temperature changes.

3. Construction Methods. Ensure the equipment, design, and construction utilize the latest available techniques with a minimum number of different parts, subassemblies, circuits, cards, and modules to maximize standardization and commonality.

Design the equipment for ease of maintenance. All component parts must be readily accessible for inspection and maintenance. The only tools and test instruments required for maintenance by maintenance personnel must be simple hand held tools, basic meters and oscilloscopes.

A. Electronic Components. Ensure all electronic components comply with Special Specification Item, "Electronic Components".

B. Mechanical Components. Ensure all external screws, nuts, and locking washers are stainless steel. Do not use self tapping screws unless specifically approved by the Engineer.

Ensure all parts are made of corrosion resistant material, such as plastic, stainless steel, aluminum or brass.

Ensure all materials used in construction are resistant to fungus growth and moisture deterioration.

Separate dissimilar metals by an inert dielectric material.

K. Delivery.

1. The use of the detailed drawings does not relieve the supplier of the responsibility for providing proper fit of camera pole assembly components.

2. Furnish by the supplier 4 copies of mill certificates reflecting the physical and chemical properties of the base metal of the pole, base plate, and anchor bolts. Provide also, 4 certified copies of the galvanizing test report.

3. Identify all Items of a shipment with a weatherproof tag. This tag minimally must identify manufacturer, contract number, and date and destination of shipment.

4. **Measurement.** This Item will be measured as each unit complete in place, excluding foundations.

5. **Payment.** The work performed and materials furnished in accordance with this Item and measured as provided for under "Measurement", will be paid for at the unit price bid for "Camera Pole Structure". This price is full compensation for furnishing, fabricating, and erecting the camera pole structure (including CCTV cabinet); for furnishing and placing anchor bolts, nuts and washers; for furnishing and placing electrical conduit in the foundation; and for all other details and incidentals necessary to provide a camera pole structure in accordance with the Specifications, plans and approved working drawings, complete in place and ready for the attachment of the camera.

   Foundations will be paid for under Item 416, "Drilled Shaft Foundations".